Lesser Sunda Islands.

Two birds (a male and female) in the Western Australian Museum from Santo in the New Hebrides are generally similar in colour to birds from eastern Australia. They are slightly smaller (Table 1) and have the green on the wings and back deep pure green with little bronze.

SUBSPECIES RECOGNISED

Condon (1975) recognised three subspecies in Australia: *Chalcophaps indica chrysochlora* from northern Queensland south of the Cape York Peninsula, New South Wales, Victoria and Lord Howe Island; *C. i. longirostris* from Cape York Peninsula Queensland, west to Groote Eylandt, Port Bradshaw and Port Keats in the Northern Territory, the Kimberley Western Australia, and southern New Guinea and islands; and *C. i. melvillensis* Zietz from Melville Island, Northern Territory. This treatment was rather peculiar considering that Peters (1961) had included Cape York Peninsula and New Guinea birds with *C. i. chrysochlora* and Melville Island birds with *C. i. longirostris*. Peters also queried the validity of *longirostris*, however my study has shown that the two Australian forms *C. i. chrysochlora* and *C. i. longirostris* are geographical isolates and differ in colour pattern and size. Frith (1982) came to similar conclusions and recognised both *C. i. chrysochlora* and *C. i. longirostris* in Australia.

Green-winged Pigeons from New Guinea, New Caledonia and the New Hebrides differ only slightly from easfern Australian birds so it appears that these areas have only recently been colonised. Mayr (1945) included birds from New Caledonia in *C. i. chrysochlora* and those from the Loyalty Islands, New Hebrides and Santa Cruz group in *C. i. sandwichensis*.

In summary the following nomenclature is adopted: *Chalcophaps indica chrysochlora* (Wagler); *Chalcophaps indica longirostris* Gould (including *C. i. melvillensis* Zietz); *Chalcophaps indica timorensis* Bonaparte; and *Chalcophaps indica sandwichensis* Ramsay. Table 1 lists these subspecies, their locality and measurements.

ACKNOWLEDGEMENTS

For the loan of specimens I am grateful to Dr R. Schodde (CSIRO) and Dr I.C.J. Galbraith (BMNH). I am indebted to Dr G.M. Storr for comments on the manuscript.

REFERENCES

CONDON, H.T. (1975). *Checklist of the Birds of Australia, Part 1. Non-passerines.* (Melbourne: RAOU).

FRITH, H.J. (1982). *Pigeons and Doves of Australia*. Adelaide: Rigby.

GOODWIN, D. (1974). Columbidae - Pigeons and Doves, in Hall, P.B. (1974), Birds of the Harold Hall Australian Expeditions, 1962-70. London: Brit. Mus. (Nat. Hist.).

MAYR, E. (1945). *Birds of the Southwest Pacific*. MacMillan, New York.

PETERS, J.L. (1937). *Checklist of Birds of the World*. Vol. III. (Harvard Univ. Press: Cambridge, Mass.).

STORR, G.M. (1969). Green-winged and Flock Pigeons in the Kimberley Division. *West. Aust. Nat.* II: 69.

STORR, G.M. (1973). List of Queensland Birds. *West. Aust. Mus. Spec. Publs.* No. 5.

STORR, G.M. (1977). Birds of the Northern Territory. *West. Aust. Mus. Spec. Publs.* No. 7.

STORR, G.M. (1980). Birds of the Kimberley Division, Western Australia. *West. Aust. Mus. Spec. Publs.* No. II.

NEW RECORDS OF REPTILES ON DIRK HARTOG ISLAND, WESTERN AUSTRALIA

By BRADFORD MARYAN, Lynwood W.A. 6155, DAVID ROBINSON, Duncraig W.A. 6023 and ROBERT BROWNE-COOPER, Shenton Park W.A. 6008.

The intermediate section of the Western Australian Naturalists Club visited Dirk Hartog Island (Lat: 26°S, Long: 113°E) during May 1982 and January 1984. During these visits the amateur herpetologists of the group recorded 28

species of reptiles previously recorded for the island (Storr & Harold 1978) together with four species that had not been previously recorded. Data on the additional species are as follows:

***Pseudonaja nuchalis* (Gwardar)**
According to Storr & harold (1978) the only species of large elapid inhabiting Dirk Hartog Island is the Mulga Snake *Pseudechis australis*. During January three sub-adult Gwardar specimens were caught underneath pieces of corrugated sheet iron in the rubbish disposal area, north-west of the main homestead. A colour slide of this species has been given to the W.A. Museum for registration from this location.

Vermicella fasciolata fasciolata
One specimen was collected in January while active at night along a sandy track; it was found by means of spotlighting with torches. This snake (R82179 in the W.A. Museum) was atypical of the species in having a high ventral count of 196 and 19 mid-body scale rows. It is possible that this snake could represent a new sub-species.

Lerista elegans
Specimens of this fossorial skink were caught in May in *Acacia* leaf litter on white sands. These were identified by Mrs Betty Wellington.

Menetia greyii
One specimen collected during May and two during January. The May specimen was uncovered from *Acacia* leaf litter on white sands and is now registered (R76576) at the W.A. Museum. One January specimen was caught underneath a piece of corrugated sheet iron at the rubbish disposal area, the other was observed while active on a sandy track during daytime.

The only literature on the herpetofauna of the Shark Bay Region, is that of Storr & Harold (1978), who for many species do not list any specific habitat information for the island. Data on habitat for some species was collected on the visits in 1982 and 1984 and is presented below.

Crenadactylus ocellatus horni
Specimens were caught underneath pieces of corrugated sheet iron and also on sandy tracks while spotlighting in tall open heath, of mainly *Acacia ligulata* and low shrubbery of *Atriplex* and *Pittosporum*.

Phyllurus milii
Specimens were caught around main homestead while spotlighting, this species was also occupying the many small crevices in the limestone walls of the homestead.

Clenolus youngsoni
One caught underneath a piece of corrugated sheet iron in an area where the surrounding habitat has been heavily degraded by livestock.

Egernia stokesii badia
One specimen caught underneath corrugated sheet iron around main homestead. Another two caught at Quoin Bluff South underneath limestone slabs with low very open heath.

Lerista planiventralis planiventralis
Four specimens caught: two from underneath pieces of corrugated sheet iron, other two uncovered from *Acacia* leaf litter while spotlighting. Tall open heath, mainly *Acacia ligulata* and low shrubbery.

Lerista praepedita
One specimen caught at Notch Point (cliff) underneath limestone with low open heath.

Varanus gouldii
Four specimens were observed during daytime in tall open heath.

Liasis childreni
One specimen was caught underneath sheet iron pile in tall open heath with varying degrees of *Acacia ligulata*. Another specimen from underneath limestone in low open shrubland consisting of samphire species.

Demansia olivacea calodera
A number of specimens were caught in tall open heath and also from underneath pieces of corrugated sheet iron around main homestead.

Demansia reticulata reticulata
One specimen caught from underneath corrugated sheet iron on white coastal sands with *Olearia axillaris* and *Spinifex longifolius*. Another from tall open

heath underneath iron.

Pseudechis australis
Two specimens caught: one from underneath pieces of corrugated sheet iron with *Olearia axillaris*, the other was caught active at night in an unused shed at the homestead.

REFERENCES

STORR, G.M. & HAROLD, G. 1978. Herpetofauna of the Shark Bay Region. Western Australia. *Rec. West. Aust. Mus.* 6: 449-466.

STORR G.M. 1978. Taxonomic notes on the Reptiles of the Shark Bay Region. Western Australia. *Rec. West. Aust. Mus.* 6: 303-318.

BUD AUTOGAMY IN *OROBANCHE* L. (OROBANCHACEAE)

By G.J. KEIGHERY, Kings Park and Botanic Garden, West Perth, Western Australia.

Orobanche is a cosmopolitan genus of 140 species of flowering plants, which are obligate root parasites. Members of the genus are predominantly northern hemisphere in distribution, and only one native species (*Orobanche australiana* F. Muell. ex Tate) is recorded for Western Australia. Green (1981) also records the cosmopolitan *O. minor* Sm., but the collection on which this record is based is *O. australiana* (which is very closely related to *O. minor*). *Orobanche australiana* is widespead throughout southern Western Australia and South Australia, parasitic on a wide range of native and naturalized plants.

Orobanche australiana is an annual herb, which is only apparent when the fleshy underground stem (a bulb like structure, which stores food to produce an inflorescence, but dies after seeds are formed - K. Dixon, pers. comm.) sends up an inflorescence during spring. The inflorescence is brown/purple in colour, to 20 cm tall, bearing a spike of brown purple flowers.

Kuijit (1969) noted that members of the genus *Orobanche* are adapted for cross pollination, having flowers which are conspicuous, with contrasting colours around the floral entry and the usual two lipped condition of blossom visited by bees or bumble bees. However, actual observational data appears very rare, none is mentioned by Beck - Mannagetta (1930) and I was not able to locate any. Obviously considerable study is needed on the genus, but Visser (1981) does note that bees pollinate *Orobanche* in South Africa (without reference to any other study), so perhaps the information exists but is still largely anecdotal in nature.

Some rare exceptions from cross pollination do occur in the genus. Jensen (1951) has demonstrated that parthenogenesis (seed setting without fertilization) occurs in some populations of *Orobanche uniflora* L. Kuijit (1969) has found that the same species is capable of autogamy (seed setting by self pollination) if pollination does not occur.

In general the major reference works on the family and/or genus, appear to assume that the vast majority of species are cross pollinated, even if actual studies are few.

In *Orobanche australiana* the flowers mature from the base of the inflorescence, and only 2-4 open flowers are found on any given inflorescence. Immediately above these open flowers are the large still closed buds which will replace these flowers as they fade. In these buds (Fig. 1.a) the anthers dehisce while elongating and place pollen onto the style and stigma (Fig 1.e). The stigma also matures before the bud opens, as pollen grains removed from the stigmatic surface at this stage and examined under a suitable microscope are found to be germinating.

Sections of styles (fixed in F.A.A. stained in aniline blue and examined using a flourescent microscope) examined just prior to flower opening were found to contain numerous pollen tubes. Thus, flowers are self pollinated (and many ovules probably fertilized) before the flower opens and a chance for cross pollination occurs.

Bud autogamy has been observed in 20 populations of *Orobanche australiana* (from Geraldton, Moora, Perth (4), Tutanning, Bunbury, Busselton, Augusta, Pemberton, Windy Harbour, Denmark, Albany, Mt. Barker, Cheynes Beach, Ouairading, Jerramungup, Hopetoun and Esperance) studied from southern Western Australia. In all cases whole plants (including the bulb like storage